

No. 840,490.

PATENTED JAN. 8, 1907.

H. D. HIBBARD.

VAULT.

APPLICATION FILED MAY 3, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

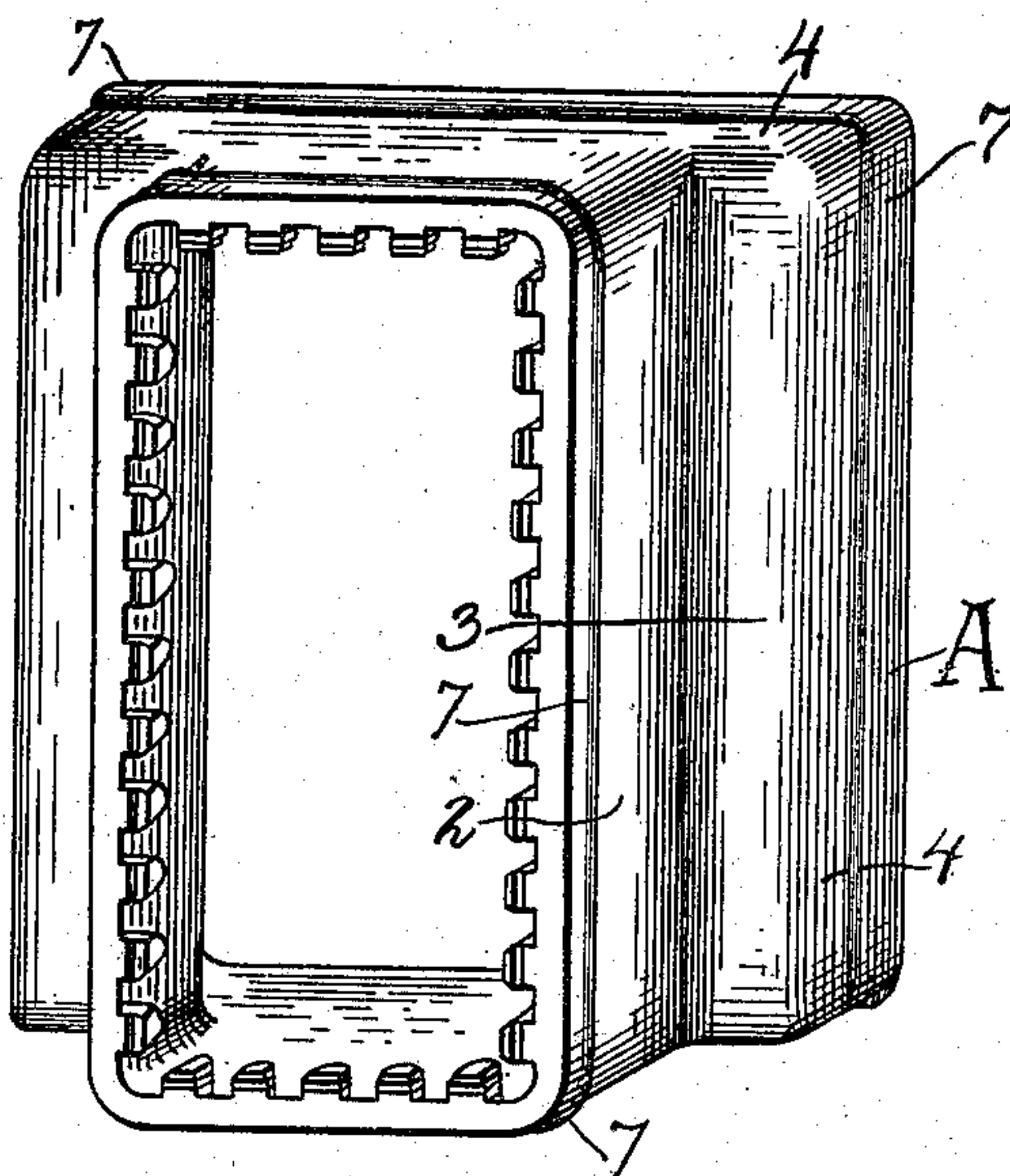


Fig. 2.

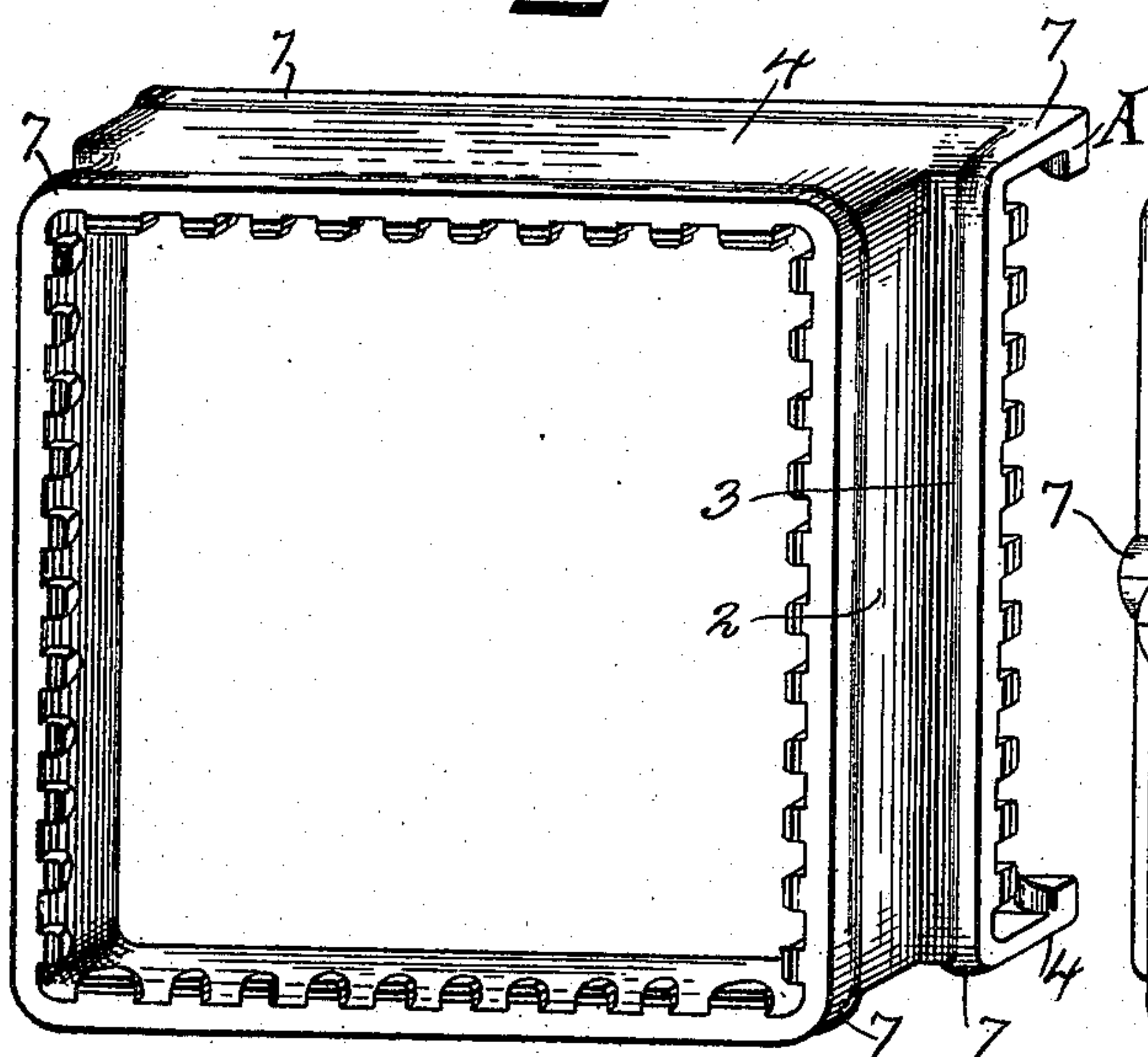
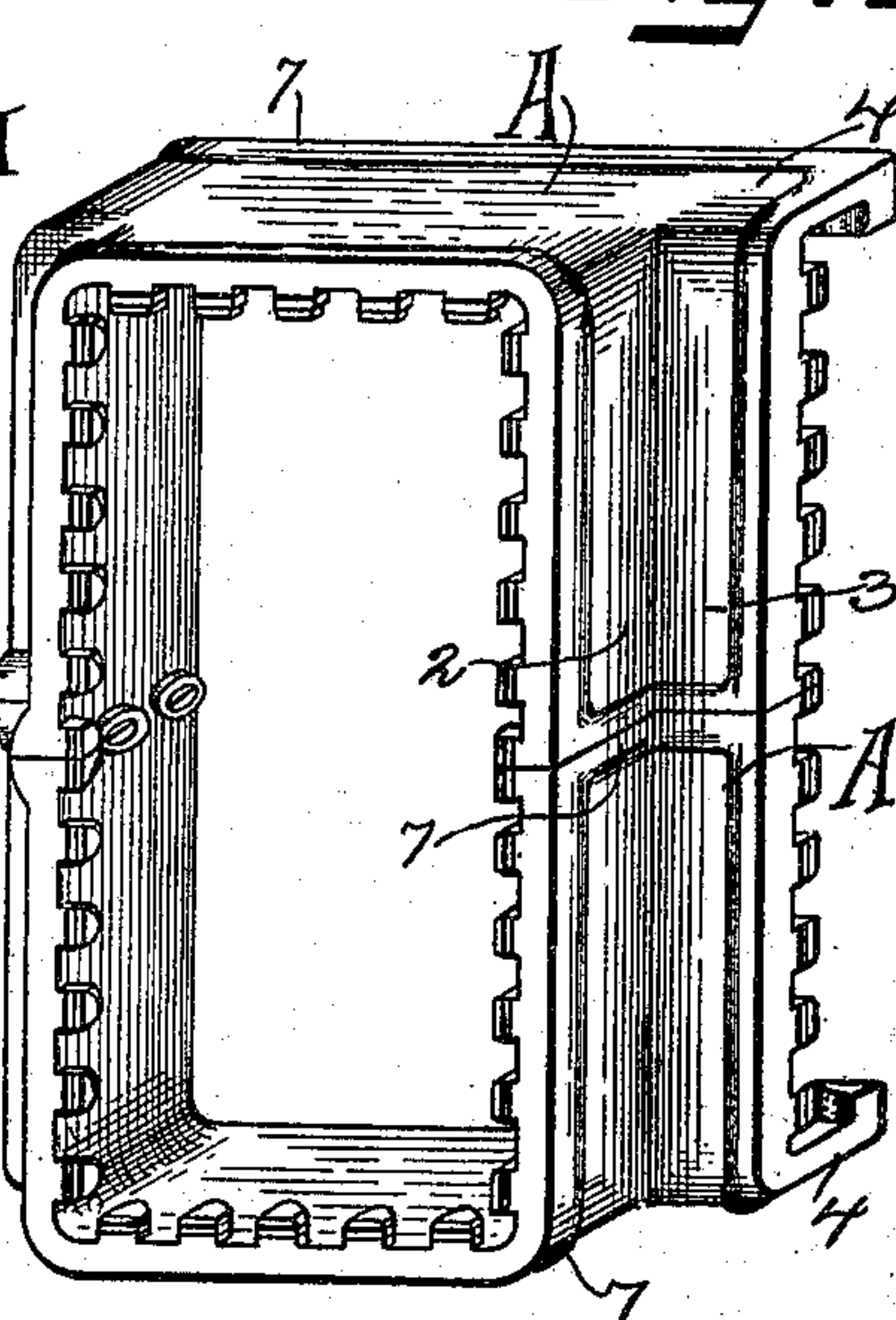


Fig. 3.



Witnesses:

H. D. Penney

H. Fleischer.

Inventor:

Henry D. Hibbard.

By his Attorney,

F. H. Richard.

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V A U L T.

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2 SHEETS—SHEET 2.

Fig. 4.

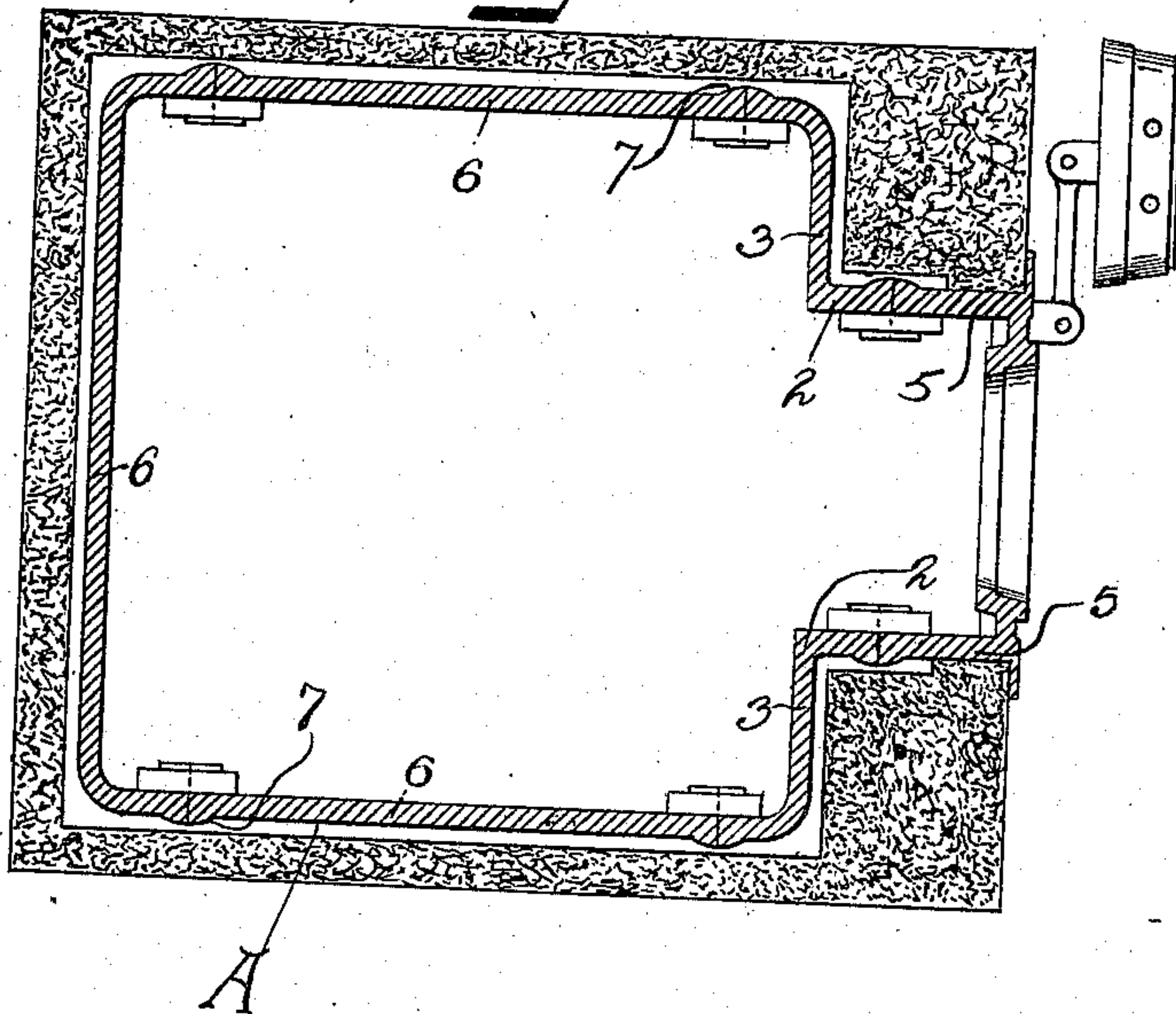
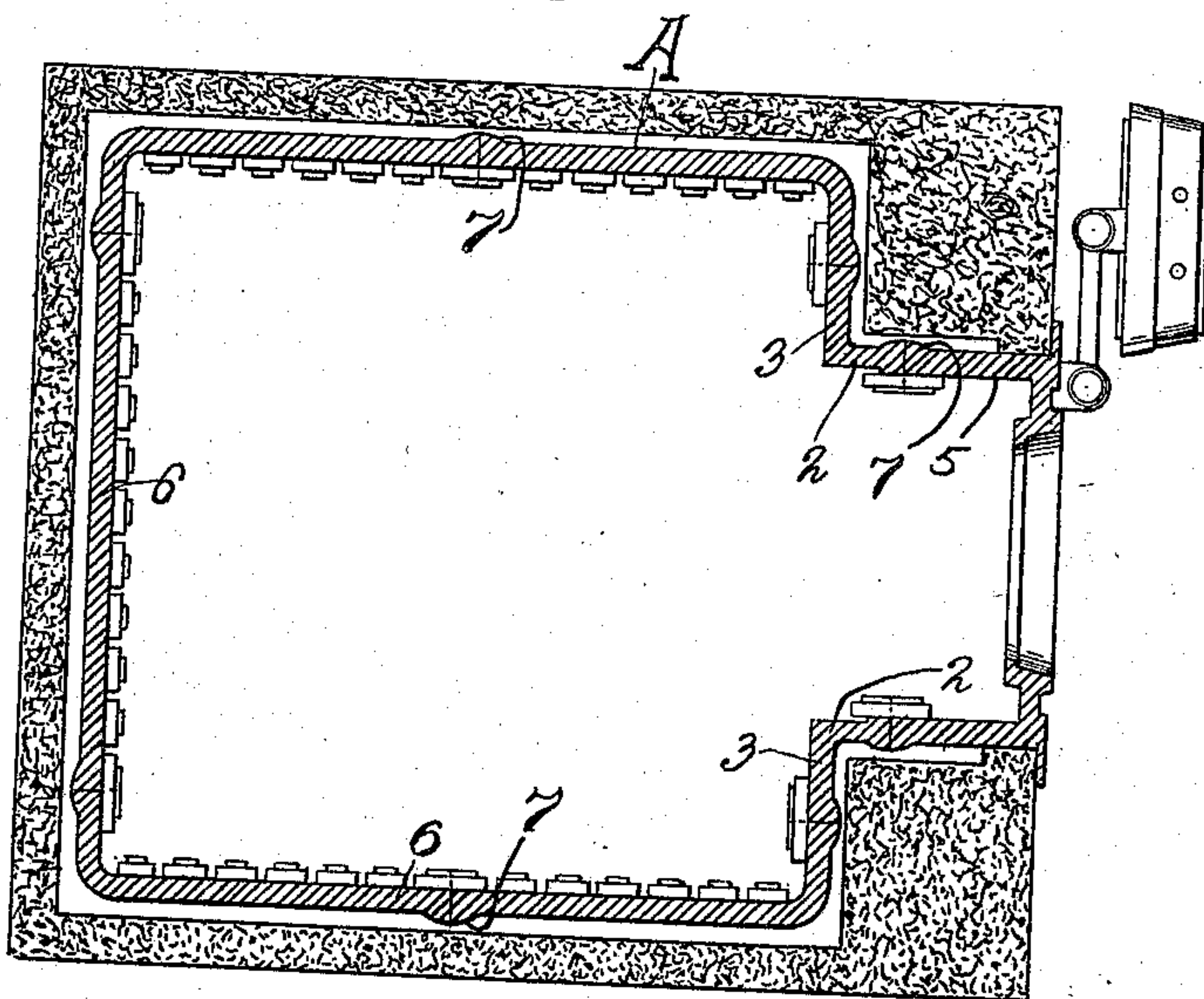


Fig. 5.



Witnesses:

L. D. Penney
A. Warden Gibbs

Inventor
Henry D. Hibbard.

By his Attorney,

S Attorney:
F. H. Richards.

UNITED STATES PATENT OFFICE.

HENRY D. HIBBARD, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO
MANGANESE STEEL SAFE COMPANY, OF NEW YORK, N. Y., A
CORPORATION OF NEW JERSEY.

VAULT.

No. 840,490.

Specification of Letters Patent.

Patented Jan. 8, 1907.

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To all whom it may concern:

Be it known that I, HENRY D. HIBBARD, a citizen of the United States, residing in Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Vaults, of which the following is a specification.

This invention relates to burglar or mob proof vaults, and particularly to that structure of vault which, owing to its size, is necessarily made up of a number of members or plates fastened or connected together; and it more particularly relates to that part thereof known and usually designated as the "vestibule" of the vault, the object of the invention being to provide an improved vestibule member or casting so formed that it will afford great rigidity and stiffness to that part of the vault in which the doorway or entrance-passage is formed and prevent the sagging thereof, and this without the necessity of increasing the thickness of the metal of the plate or casting in which such doorway is formed.

A further object is the provision of an improved vestibule member or plate formed as an integral structure and in such manner that all longitudinal joints are located away from the corners of the casting, so that no fastening means are required to connect the vestibule member to the front plate or casting of the vault.

A further object of the invention is the provision of an improved structure which will enable the use of a vestibule, and therefore of a door, of materially less area than that of the front of the vault without requiring the use of fastening means between the vestibule portion and the front plate or member of the vault.

In the drawings accompanying and forming a part of this specification, Figure 1 is a perspective view of one form of this improved vestibule member or plate, this form being particularly well adapted for use with a rectangular door. Fig. 2 is a perspective view of another form of this improved vestibule plate or member, this form being particularly well adapted for use with a circular door. Fig. 3 is a perspective view of another form of improved vestibule members or plates, this view showing a pair thereof as-

sembled. Fig. 4 is a cross-sectional view of a vault with that form of this improved vestibule member or plate shown in Fig. 1 in its proper position; and Fig. 5 is also a sectional view of a vault with that form of vestibule member or plate shown in Fig. 3 assembled in its proper position.

Similar characters of reference indicate corresponding parts throughout the different figures of the drawings.

Vaults of large size are necessarily made up of a number of plates, members, or castings suitably connected or fastened together edge-wise, and such vaults require and are furnished with doors of sufficient size to enable them to be readily entered by the users thereof, in consequence of which it has been found that that particular member or casting in which the doorway is formed has a tendency to sag, owing to the fact that when the casting is made with a large part of the metal necessarily removed to form the doorway there is insufficient metal left around such doorway to give stiffness and rigidity to the casting sufficient to prevent it from sagging, the remaining part of the metal in such plate being insufficient to support or retain such a large casting in its normal shape, and this sagging has taken place to such an extent that the door when circular becomes out of round, in other words, does not fit true in its jamb, requiring considerable effort to close it and also adjustment of the door at various times to insure the closing thereof in a proper manner. This sagging is also assisted to a large extent by the weight of the roof of the vault, and as it is impracticable and undesirable and at times impossible to increase the thickness of this particular casting of the vault to any great or appreciable extent beyond the thickness of the other castings making up the body it follows that when the plate or casting is formed with a large doorway or opening therein it must be stiffened in some practicable manner without increasing the thickness of the metal, which in a manganese-steel vault is usually only about three inches thick.

In those structures where the doorway is of substantially the same size as the body of the vault and where the vault-body is made as an integral structure the door-frame,

which, as stated, is integral with the body, is of ample strength and stiffness; but where it is necessary, as in the building of large vaults, to construct them of several members or castings and where the door must necessarily be of less size than the front of the vault it is essential that that particular casting in which the doorway is formed shall be of great rigidity and strength for the reasons hereinbefore stated. It is also frequently desirable in order to decrease the number of joints, and thereby the number of fastenings, to form the front or the front member of the vault of as large a casting as possible; but it is not practicable nor necessary nor desirable to provide a doorway, and therefore a door, of the same size, so that it becomes a material object and advantage to provide a structure in which the door may be considerably smaller than the front or front plate of the vault and yet be sufficiently large to enable entrance of one or more persons to the vault and to do this by the formation of a vestibule, which is frequently required, without, however, the use of fastening means where such vestibule is joined to the front or front member of the vault.

The object of the present invention, therefore, is the provision of a structure which will enable the formation of a vestibule of considerable size to permit proper entrance to the vault, but of materially less size than the front plate or front of the vault, without the necessity of using fastening means at the point where the vestibule is joined to the front member or front of such vault, while also so stiffening and reinforcing that casting having the doorway that it is not weakened, and therefore will not sag when in use. This improved vestibule member or casting A, which I have herein designated as the "vestibule-forming" member, comprises in its preferred form a forwardly-extending plate or flange 2, forming a part of the vestibule and having integrally formed therewith a transversely-extending plate or flange 3, forming to the extent thereof the front wall of the vault, which in turn is usually, and is shown in the drawings, provided with one or more rearwardly-extending plates or flanges 4, constituting to the extent thereof a part of the side or top walls of the vault.

In the form shown in Fig. 1 the vestibule member comprises a forwardly-extending plate or flange 2, a rearwardly-extending plate or flange 4, integrally united by a plate 3, extending transversely of said flanges. In this form it will be observed that the rearwardly-extending flange 4 extends entirely around the outer edge of the plate 3, while the forwardly-extending flange 2 extends entirely around the doorway or inner edge of said plate 3, each of such flanges being provided adjacent its free edges with suitable means for the reception of fastening devices,

(shown in the present instance as a series of projections for the reception of link-bolts,) which may be secured thereon in any suitable manner—as, for instance, by being shrunk thereon.

In the form of vestibule member shown in Fig. 2 the plate 3 is provided with a rearwardly-extending flange 4 only at two sides, (shown as the top and bottom thereof,) the plate 3 being provided in this instance along its two free edges with means—such, for instance, as projections—for the reception of fastening devices.

In the form shown in Fig. 3 the vestibule structure is made up of a pair of members or castings, in each of which the plate 3 is provided with but one rearwardly-extending flange 4, while the forwardly-extending flange 2 is a three-sided one only, the two members being fastened midway of the height of the vestibule by suitable fastening means, preferably similar to those hereinbefore described. It will be noted, however, that even in this form there is no fastening means needed or required longitudinally of the corners between the forwardly-extending flange or vestibule portion 2 of the structure and the plate 3 of the casting, where it would be extremely difficult to obtain a sufficiently strong, accurate, and tight-fitting joint. As such joint also facilitates the lodgment of explosive material and increases the effect thereof, it is essential that it be so formed as to have superior resisting qualities.

In the vault shown in Fig. 4 the vestibule member illustrated in Fig. 1 is assembled, from which it will be seen that in front thereof is located the door-frame 5, supporting the door, and in the rear thereof the other members 6 of the vault, which are used to make up the vault-body. In the forms shown in Figs. 1 and 3 the vestibule members are particularly constructed for use with a rectangular door, while in the form shown in Fig. 2 the vestibule member is particularly constructed for use with a circular door, the manner of assembling the form of castings shown in Fig. 3 in connection with the vault-body and the door-frame being shown in Fig. 5.

In some constructions of vaults it may be desirable to extend the transversely-extending plate 3 above or below, or both above and below, the forwardly-extending flange 2 in the same manner as this plate is shown, extended at the sides beyond the flange 2 in Fig. 2, and with or without the rearwardly-extending flange 4, and the same advantages to a large extent are obtained should the castings be made in quarter-sections instead of half-sections, as in Fig. 3, all of which is within the purview of my invention.

By constructing the vestibule-forming member in the manner shown it will be apparent that the forwardly-extending and

also the rearwardly-extending flanges materially stiffen and reinforce the plate 3, which forms one of the front walls of the vault, so that even with a large door opening therein the metal of this plate around said doorway is materially strengthened and reinforced so that it will not sag, and this without the formation of joints at the corners, where the flanges are joined to the plate, thus doing away with the necessity of using fastening devices at these points, which, as stated, is very undesirable. Thus by angling the front plate in the manner set forth not only is an integral structure provided without any joints between the vestibule-forming flange and the front plate of the vault or between such plate and the rearwardly-extending flange when this is provided, but one in which without the use of fastening means for connecting the several components thereof together the front or front plate of the vault may be made of a relatively large casting while enabling the vestibule to be made of smaller dimensions but of sufficient size to give proper entrance to the vault. Each edge of the plate where in connection with a companion plate a joint is formed is provided with a swell or bead 7, which not only reinforces the edge of the plate by reason of the increased amount of metal at this point, but also reinforces it in other ways—for instance, it facilitates the heat treatment of the casting when it is desired to develop superior properties in the steel by heat treatment, and especially if they are made of manganese steel—that is, of steel having a predetermined quantity of manganese therein.

I claim as my invention—

1. A vault comprising a body, a door-frame, and a vestibule-forming member located between the body and door-frame and comprising a plate fastened to said body and forming to the extent thereof the front wall of said body and angled to form an integral forwardly-projecting flange or plate to which said door-frame is fastened.

2. A vault comprising a body, a door-frame, and a vestibule-forming member located between the body and door-frame and comprising a plate angled to form an integral rearwardly-extending flange fastened to the body and an integral forwardly-projecting flange to which said door-frame is fastened.

3. A vault comprising a body made up of several members including a door-frame, each having along its free edges inwardly-extending projections for the reception of fastening means, and a vestibule-forming member located between the body and door-frame and comprising a casting angled to form a forwardly-extending flange, said vestibule-forming member having along its

edges at its points of juncture with the body and door-frame inwardly-extending projections for the reception of fastening means for securing said vestibule-forming member in position.

4. A vault comprising a body made up of several members including a door-frame, each having along its free edges inwardly-extending projections for the reception of fastening means, and a vestibule-forming member located between the body and door-frame and comprising a casting angled to form a rearwardly-extending flange and a forwardly-extending flange, said vestibule-forming member having along its edges at its points of juncture with the body and door-frame inwardly-extending projections for the reception of shrunk-in link-bolts for securing said vestibule-forming member in position.

5. A vault comprising a body, a door-frame, and a vestibule-forming member located between the body and door-frame and comprising an integral, angularly-formed structure fastened to said body and door-frame with the joints between said vestibule-forming member and the door-frame and body respectively located away from the corners of the vestibule-forming member.

6. A vault comprising a body, a door-frame, and an integral, angularly-formed vestibule-forming member located between said body and door-frame, each of said structures having contiguous inwardly-extending projections for the reception of fastening means to connect one member to the other, the joints of said angularly-formed vestibule member being located away from the corners thereof.

7. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the wall of the doorway or vestibule and in one piece therewith a transversely-extending plate or flange forming to the extent thereof the front wall of the vault said member having each of its plates or flanges formed with a plurality of edges in position and adapted to engage similarly-formed edges of companion members to make up the vault-body.

8. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule and in one piece therewith a transversely-extending plate or flange forming to the extent thereof the front wall of the vault, the free edges of said plates having means for the reception of fastening devices for connecting said vestibule member to companion members or plates.

9. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule and in one piece therewith a trans-

versely-extending plate or flange forming to the extent thereof the front wall of the vault, the free edges of said plates having inwardly-extending projections for the reception of fastening devices.

10. A vestibule-forming member for vaults comprising a forwardly-extending member or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange, each integrally joined by a plate extending transversely to said flanges.

11. A vestibule-forming member for vaults comprising a forwardly-extending member or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange, each integrally joined by a plate extending transversely to said flanges, the rearwardly-extending flange located at the outer edge of said transversely-extending plate and the forwardly-extending flange located at the inner edge thereof and forming a vestibule of less area than said plate.

12. A vestibule-forming member for vaults comprising a forwardly-extending member or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange, each integrally joined by a plate extending transversely to said flanges, the free edges of said structure having means for the reception of fastening devices.

13. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, one of said flanges extending along a plurality of the edges of said plate.

14. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, one of said flanges extending along a plurality of the inner edges of said plate.

15. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, one of said flanges extending along a plurality of the outer edges of said plate.

16. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, said

flanges extending along a plurality of both the inner and outer edges of said plate.

17. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, one or both of said flanges extending all the way around the edge of said plate.

18. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, one of said flanges extending all the way around the outer edge of said plate.

19. A vestibule-forming member for vaults comprising a forwardly-extending plate or flange forming a part of the doorway or vestibule portion, and a rearwardly-extending plate or flange integrally joined by a plate extending transversely to said flanges, one of said flanges extending all the way around the inner edge of said plate.

20. A vestibule-forming member for vaults comprising an integral structure formed of a single thickness of metal comprising a plate having one or more rearwardly-extending portions or flanges and a forwardly-projecting portion or flange extending around the front of said plate and forming a part of the vestibule or doorway and provided along its free edges with inwardly-extending projections for the reception of fastening means.

21. A vestibule-forming member for vaults comprising an integral structure formed of a plate having a passage-way or opening therein and having a rearwardly-extending portion or flange along one or more of its edges, and a forwardly-extending flange all around said opening, a part of such forwardly-extending flange being within the outer edge of the plate and the free edges of said member having inwardly-extending projections for the reception of fastening means.

22. A vestibule-forming member, comprising a rearwardly-extending plate or flange, a forwardly-extending plate or flange, and a plate or flange extending transversely thereof and adapted to form to the extent thereof the front wall of a vault and having a plurality of edges adapted to engage similarly-formed edges of companion members to make up the vault-body.

HENRY D. HIBBARD.

Witnesses:

C. A. WEED,
F. E. BOYCE.